

What is claimed is:

1. An electro-rheological fluid, comprising a water-soluble starch, less than 5 wt % (excluding 0 wt %) of water to total weight of the electro-rheological fluid, an  
5 additive to improve flow properties of the fluid and to prevent precipitation of particles in the fluid, and a non-conductive solvent.
2. The electro-rheological fluid according to claim 1, wherein water content is less than 3 wt % (excluding 0 wt %).
- 10 3. The electro-rheological fluid according to claim 1, wherein water content is less than 1 wt % (excluding 0 wt %).
4. The electro-rheological fluid according to claim 1, wherein the non-  
15 conductive solvent is selected from the group consisting of silicon oil, transformer oil, transformer insulating fluid, mineral oil, olive oil and mixtures thereof.
5. The electro-rheological fluid according to claim 2, wherein the non-  
20 conductive solvent is selected from the group consisting of silicon oil, transformer oil, transformer insulating fluid, mineral oil, olive oil and mixtures thereof.
6. The electro-rheological fluid according to claim 3, wherein the non-  
conductive solvent is selected from the group consisting of silicon oil, transformer oil, transformer insulating fluid, mineral oil, olive oil and mixtures thereof.

7. The electro-rheological fluid according to claim 1, wherein the content of the water-soluble starch is 5 - 70 wt % of total weight of the electro-rheological fluid.

5 8. The electro-rheological fluid according to claim 2, wherein the content of the water-soluble starch is 5 - 70 wt % of the total weight of the electro-rheological fluid.

9. The electro-rheological fluid according to claim 3, wherein the content of  
10 the water-soluble starch is 5 - 70 wt % of the total weight of the electro-rheological fluid.

10. The electro-rheological fluid according to claim 1, wherein the water-soluble starch is dried ground particles of less than 10 $\mu$ m in size.

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11. The electro-rheological fluid according to claim 2, wherein the water-soluble starch is dried ground particles of less than 10 $\mu$ m in size.

12. The electro-rheological fluid according to claim 3, wherein the water-  
20 soluble starch is dried ground particles of less than 10 $\mu$ m in size.

13. The electro-rheological fluid according to claim 10, prepared by an additional heating process.

25 14. The electro-rheological fluid according to claim 1, wherein the additive is a

surfactant in an amount less than 1 wt % (excluding 0 wt %) of total weight of the electro-rheological fluid.

15. A preparation method of an electro-rheological fluid, comprising the steps  
5 of:

1) grinding water-soluble starch in a grinder so as to have a size less than  
10  $10\mu\text{m}$ ;

2) drying the water-soluble starch particles obtained in step 1) in a  
thermohygrostatic chamber at a temperature of 35 - 45°C and relative humidity of  
10 30 - 50 %;

3) mixing a non-conductive solvent and an additive;

4) mixing the dried water-soluble starch particles obtained in step 2) with  
the mixture of the non-conductive solvent and additive obtained in step 3) such  
that the amount of the dried water-soluble starch particles is 5 - 70 wt % of total  
15 weight of the electro-rheological fluid;

5) boiling the fluid obtained in step 4) at 80 - 150°C in an oil bath; and

6) grinding the obtained fluid in a grinder so as to uniformly mix particles  
contained in the fluid.